

Application No.: 09/722,270

Docket No.: R2184.0089/P089

AMENDMENTS TO CLAIMS

1. (currently amended) An image forming method, comprising the steps of:
a) multi-level quantizing a multi-tone image by an error diffusion method;
and

b) representing each pixel of the thus-quantized image having a quantized level higher than 0 using a dot which is larger as the quantized level thereof is higher, wherein occurrence of dots having a specific size is repressed in a specific shade region relating to the dots; and

wherein re-quantization is performed, after the multi-level quantization is performed, in which, for a pixel having a specific quantization level, image data having an error added thereto according to the error diffusion method is compared with a threshold, and a final output value is determined.

2. (original) The method as claimed in claim 1, wherein occurrence of the smallest dots is repressed.

3. (original) The method as claimed in claim 1, wherein occurrence of the dots other than the largest dots is repressed.

4. (original) The method as claimed in claim 1, wherein an occurrence rate of the dots having the specific size is controlled based on the number of dots in a specific region in the periphery of a target pixel.

5. (original) The method as claimed in claim 1, wherein an occurrence rate of the dots having the specific size is controlled based on the number of dots in a specific region in the periphery of a target pixel and a shade level of the target pixel.

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6. (original) The method as claimed in claim 1, wherein an occurrence rate of the dots having the specific size is controlled based on the number of dots having a specific size in a specific region in the periphery of a target pixel.

7. (original) The method as claimed in claim 1, wherein an occurrence rate of the dots having the specific size is controlled based on the number of dots having a specific size in a specific region in the periphery of a target pixel and a shade level of the target pixel.

8. (original) The method as claimed in claim 1, wherein a degree of repressing occurrence of the dots having the specific size is changed according to a feature of the image.

9. (currently amended) An image forming method, comprising the steps of:
a) multi-level quantizing a multi-tone image by an error diffusion method;
and
b) representing each pixel of the thus-quantized image having a quantized level higher than 0 using a dot which is larger as the quantized level thereof is higher,
wherein occurrence of dots having a specific size is repressed in a specific shade region relating to the dots,
wherein a degree of repressing occurrence of the dots having the specific size is changed according to a feature of the image; and
~~The method as claimed in claim 8,~~ wherein occurrence of the dots having the specific size is repressed only for a picture region of the image.

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10. (currently amended) An image forming method, comprising the steps of:
a) multi-level quantizing a multi-tone image by an error diffusion method;
and
b) representing each pixel of the thus-quantized image having a quantized level higher than 0 using a dot which is larger as the quantized level thereof is higher,
wherein occurrence of dots having a specific size is repressed in a specific shade region relating to the dots,
wherein a degree of repressing occurrence of the dots having the specific size is changed according to a feature of the image; and
~~The method as claimed in claim 8,~~ wherein the degree of repressing occurrence of the dots having the specific size is made weaker for a character region of the image than for a picture region of the image.

11. (currently amended) An image forming method, comprising the steps of:
a) multi-level quantizing a multi-tone image by an error diffusion method;
and
b) representing each pixel of the thus-quantized image having a quantized level higher than 0 using a dot which is larger as the quantized level thereof is higher,
wherein occurrence of dots having a specific size is repressed in a specific shade region relating to the dots,
wherein a degree of repressing occurrence of the dots having the specific size is changed according to a feature of the image; and
~~The method as claimed in claim 8,~~ wherein occurrence of the dots having the specific size is repressed only for a non-edge region of the image.

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12. (original) The method as claimed in claim 1, wherein repressing of occurrence of the dots having the specific size is performed for a medium shade region of the image.

13. (original) The method as claimed in claim 1, wherein repressing of occurrence of the dots having the specific size is performed for a dark shade region of the image.

14. (original) The method as claimed in claim 1, wherein repressing of occurrence of the dots having the specific size is performed for medium and dark shade regions of the image.

15. (currently amended) An image processing method, comprising the steps of:

- a) multi-level quantizing multi-tone image data; and
- b) repressing occurrence of one or more specific quantized levels for a specific level region of the image data relating to the one or more specific quantized levels; and

wherein re-quantization is performed, after the multi-level quantization is performed, in which, for a pixel having a specific quantization level, image data having an error added thereto according to the error diffusion method is compared with a threshold, and a final output value is determined.

16. (original) The method as claimed in claim 15, wherein re-quantization is performed for the one or more specific quantized levels, occurrence of which is to be repressed.

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17. (original) The method as claimed in claim 15, wherein occurrence of the one or more specific quantized levels is repressed for a medium level region of the image data.

18. (original) The method as claimed in claim 15, wherein occurrence of the one or more specific quantized levels is repressed for a high level region of the image data.

19. (original) The method as claimed in claim 15, wherein occurrence of the one or more specific quantized levels is repressed for medium and high level regions of the image data.

20. (original) The method as claimed in claim 15, wherein an occurrence rate of the one or more specific quantized levels, occurrence of which is to be repressed, is controlled based on the number of pixels quantized to quantized levels higher than 0 in a specific region in the periphery of a target pixel.

21. (original) The method as claimed in claim 15, wherein an occurrence rate of the one or more specific quantized levels, occurrence of which is to be repressed, is controlled based on the number of pixels quantized to quantized levels higher than 0 in a specific region in the periphery of a target pixel and the level of the image data of the target pixel.

22. (original) The method as claimed in claim 15, wherein an occurrence rate of the one or more specific quantized levels, occurrence of which is to be repressed, is controlled based on the number of pixels quantized to a specific quantized level in a specific region in the periphery of a target pixel.

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23. (original) The method as claimed in claim 15, wherein an occurrence rate of the one or more specific quantized levels, occurrence of which is to be repressed, is controlled based on the number of pixels quantized to a specific quantized level in a specific region in the periphery of a target pixel and the level of the image data of the target pixel.

24. (original) The method as claimed in claim 15, wherein a degree of repressing occurrence of the one or more specific quantized levels is changed according to a feature of the image.

25. (currently amended) An image processing method, comprising the steps of:

a) multi-level quantizing multi-tone image data; and

b) repressing occurrence of one or more specific quantized levels for a specific level region of the image data relating to the one or more specific quantized levels.

wherein a degree of repressing occurrence of the one or more specific quantized levels is changed according to a feature of the image; and

The method as claimed in claim 24, wherein occurrence of the one or more specific quantized levels is repressed only for a picture region of the image.

26. (currently amended) An image processing method, comprising the steps of:

a) multi-level quantizing multi-tone image data; and

b) repressing occurrence of one or more specific quantized levels for a specific level region of the image data relating to the one or more specific quantized levels.

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wherein a degree of repressing occurrence of the one or more specific quantized levels is changed according to a feature of the image; and

~~The method as claimed in claim 24~~, wherein the degree of repressing occurrence of the one or more specific quantized levels is made weaker for a character region of the image than for a picture region of the image.

27. (currently amended) An image processing method, comprising the steps of:

a) multi-level quantizing multi-tone image data; and

b) repressing occurrence of one or more specific quantized levels for a specific level region of the image data relating to the one or more specific quantized levels.

wherein a degree of repressing occurrence of the one or more specific quantized levels is changed according to a feature of the image; and

~~The method as claimed in claim 24~~, wherein occurrence of the one or more specific quantized levels is repressed only for a non-edge region of the image.

28. (original) The method as claimed in claim 17, wherein re-quantization is performed for the one or more specific quantized levels, occurrence of which is to be repressed.

29. (original) The method as claimed in claim 18, wherein re-quantization is performed for the one or more specific quantized levels, occurrence of which is to be repressed.

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30. (original) The method as claimed in claim 19, wherein re-quantization is performed for the one or more specific quantized levels, occurrence of which is to be repressed.

31. (original) An image forming method comprising the steps of:

- a) multi-level quantizing multi-tone image data by the image processing method as claimed in claim 15; and
- b) forming an image from the thus-multi-level-quantized image data using dots for pixels which dots are larger as the pixels have higher quantized levels.

32. (original) An image forming method comprising the steps of:

- a) multi-level quantizing multi-tone image data by the image processing method as claimed in claim 16; and
- b) forming an image from the thus-multi-level-quantized image data using dots for pixels which dots are larger as the pixels have higher quantized levels.

33. (currently amended) An image processing apparatus, comprising:

- a first part multi-level quantizing multilevel input image data; and
- a second part repressing occurrence of one or more specific quantized levels for a specific level region of the image data relating to the one or more specific quantized levels; and

wherein re-quantization is performed, after the multi-level quantization is performed, in which, for a pixel having a specific quantization level, image data having an error added thereto according to the error diffusion method is compared with a threshold, and a final output value is determined.

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34. (original) The apparatus as claimed in claim 33, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

35. (original) The apparatus as claimed in claim 33, wherein said second part represses occurrence of the one or more specific quantized levels for a medium level region of the image data.

36. (original) The apparatus as claimed in claim 33, wherein said second part represses occurrence of the one or more specific quantized levels for a high level region of the image data.

37. (original) The apparatus as claimed in claim 33, wherein said second part represses occurrence of the one or more specific quantized levels for medium and high level regions of the image data.

38. (original) The apparatus as claimed in claim 33, wherein said second part controls occurrence rates of the one or more specific quantized levels, occurrence of which is to be repressed, based on the number of pixels quantized to quantized levels higher than 0 in a specific region in the periphery of a target pixel.

39. (original) The apparatus as claimed in claim 33, wherein said second part controls occurrence rates of the one or more specific quantized levels, occurrence of which is to be repressed, based on the number of pixels quantized to quantized levels higher than 0 in a specific region in the periphery of a target pixel and the level of the image data of the target pixel.

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40. (original) The apparatus as claimed in claim 33, wherein said second part controls occurrence rates of the one or more specific quantized levels, occurrence of which is to be repressed, based on the number of pixels quantized to a specific quantized level in a specific region in the periphery of a target pixel.

41. (original) The apparatus as claimed in claim 33, wherein said second part controls occurrence rates of the one or more specific quantized levels, occurrence of which is to be repressed, based on the number of pixels quantized to a specific quantized level in a specific region in the periphery of a target pixel and the level of the image data of the target pixel.

42. (original) The apparatus as claimed in claim 33, wherein said second part changes degrees of repressing occurrence of the one or more specific quantized levels according to a feature of the image.

43. (currently amended) An image processing apparatus, comprising:
a first part multi-level quantizing multilevel input image data; and
a second part repressing occurrence of one or more specific quantized levels
for a specific level region of the image data relating to the one or more specific
quantized levels;

wherein said second part changes degrees of repressing occurrence of the one
or more specific quantized levels according to a feature of the image; and

~~The apparatus as claimed in claim 42,~~ wherein said second part represses occurrence of the one or more specific quantized levels only for a picture region of the image.

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44. (currently amended) An image processing apparatus, comprising:
a first part multi-level quantizing multilevel input image data; and
a second part repressing occurrence of one or more specific quantized levels
for a specific level region of the image data relating to the one or more specific
quantized levels;

wherein said second part changes degrees of repressing occurrence of the one
or more specific quantized levels according to a feature of the image; and

~~The apparatus as claimed in claim 42,~~ wherein said second part makes the
degrees of repressing occurrence of the one or more specific quantized levels weaker
for a character region of the image than for a picture region of the image.

45. (currently amended) An image processing apparatus, comprising:
a first part multi-level quantizing multilevel input image data; and
a second part repressing occurrence of one or more specific quantized levels
for a specific level region of the image data relating to the one or more specific
quantized levels;

wherein said second part changes degrees of repressing occurrence of the one
or more specific quantized levels according to a feature of the image; and

~~The apparatus as claimed in claim 42,~~ wherein said second part represses
occurrence of the one or more specific quantized levels only for a non-edge region of
the image.

46. (currently amended) An image processing apparatus, comprising:
a first part multi-level quantizing multilevel input image data; and
a second part repressing occurrence of one or more specific quantized levels
for a specific level region of the image data relating to the one or more specific
quantized levels; and

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~~The apparatus as claimed in claim 33~~, wherein said second part changes degrees of repressing occurrence of the one or more specific quantized levels according to a specified output mode.

47. (original) The apparatus as claimed in claim 35, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

48. (original) The apparatus as claimed in claim 36, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

49. (original) The apparatus as claimed in claim 37, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

50. (original) The apparatus as claimed in claim 38, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

51. (original) The apparatus as claimed in claim 39, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

52. (original) The apparatus as claimed in claim 40, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

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53. (original) The apparatus as claimed in claim 41, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

54. (original) The apparatus as claimed in claim 42, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

55. (original) The apparatus as claimed in claim 46, wherein said second part performs re-quantization for the one or more specific quantized levels, occurrence of which is to be repressed.

56. (currently amended) An image processing apparatus, comprising:

- a first part adding an error to input image data;
- a second part multi-level quantizing the image data to which the error is already added by said first part, using a plurality of quantization thresholds;
- a third part re-quantizing the quantized data provided by said second part, to another quantized level, for one or more specific quantized levels other than the highest quantized level and quantized level 0, as the need arises, and outputting the thus-obtained data as an output image data;
- a fourth part obtaining the error to be added to the input image data, from the output image data and image data to which the error is already added by said first part, and providing the thus-obtained error to said first part; and
- a fifth part detecting, from the output image data, the number of pixels quantized to be higher than the quantized level 0 in a specific region in the periphery of a target pixel, and providing the thus-obtained number to said third part,

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wherein said third part compares a threshold, relating to each of said one or more specific quantized levels, determined based on the number provided by said fifth part, with the level of the image data to which the error is already added, and, thereby, determines whether re-quantization for said each of said one or more specific quantized levels is necessary, occurrence of each of said one or more specific quantized levels being repressed in a specific level region of the input image data relating to said each of said one or more specific quantized levels through the re-quantization by said third part; and

wherein re-quantization is performed, after the multi-level quantization is performed, in which, for a pixel having a specific quantization level, image data having an error added thereto according to the error diffusion method is compared with a threshold, and a final output value is determined.

57. (original) The image processing apparatus as claimed in claim 56, wherein said third part determines that re-quantization is not necessary when the level of the input image data is out of said specific level region relating to each of said one or more specific quantized levels.

58. (currently amended) An image processing apparatus, comprising:
a first part adding an error to input image data;
a second part multi-level quantizing the image data to which the error is already added by said first part, using a plurality of quantization thresholds;
a third part re-quantizing the quantized data provided by said second part, into another quantized level, for one or more specific quantized levels other than the highest quantized level and quantized level 0, as the need arises, and outputting the thus-obtained data as output image data;

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a fourth part obtaining the error to be added to the input image data, from the output image data and image data to which the error is already added by said first part, and providing the thus-obtained error to said first part; and

a fifth part detecting, from the output image data, the number of pixels quantized to be higher than the quantized level 0 in a specific region in the periphery of a target pixel, and providing the thus-obtained number to said third part,

wherein said third part compares a threshold, relating to each of said one or more specific quantized levels, determined based on the number provided by said fifth part and the level of the input image data, with the level of the image data to which the error is already added, and, thereby, determines whether re-quantization for said each of said one or more specific quantized levels is necessary, occurrence of each of said one or more specific quantized levels being repressed in a specific level region of the input image data relating to said each of said one or more specific quantized levels through the re-quantization by said third part; and

wherein re-quantization is performed, after the multi-level quantization is performed, in which, for a pixel having a specific quantization level, image data having an error added thereto according to the error diffusion method is compared with a threshold, and a final output value is determined.

59. (currently amended) An image processing apparatus, comprising:

a first part adding an error to input image data;

a second part multi-level quantizing the image data to which the error is already added by said first part, using a plurality of quantization thresholds;

a third part re-quantizing the quantized data provided by said second part, into another quantized level, for one or more specific quantized levels other than the highest quantized level and quantized level 0, as the need arises, and outputting the thus-obtained data as an output image data;

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a fourth part obtaining the error to be added to the input image data, from the output image data and image data to which the error is already added by said first part, and providing the thus-obtained error to said first part; and

a fifth part detecting, from the output image data, the number of pixels for each quantized level in a specific region in the periphery of a target pixel, and providing the thus-obtained number to said third part,

wherein said third part compares a threshold, relating to each of said one or more specific quantized levels, determined based on the total number of pixels of each of said one or more specific quantized levels and one or more other quantized levels near to said each of the one or more specific quantized levels and the level of the input image data, with the level of the image data to which the error is already added, and, thereby, determines whether re-quantization for said each of said one or more specific quantized levels is necessary, occurrence of each of said one or more specific quantized levels being repressed in a specific level region of the input image data relating to said each of said one or more specific quantized levels through the re-quantization by said third part; and

wherein re-quantization is performed, after the multi-level quantization is performed, in which, for a pixel having a specific quantization level, image data having an error added thereto according to the error diffusion method is compared with a threshold, and a final output value is determined.

60. (currently amended) An image processing apparatus, comprising:

a first part adding an error to input image data;

a second part multi-level quantizing the image data to which the error is already added by said first part, using a plurality of quantization thresholds;

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a third part re-quantizing the quantized data provided by said second part, into another quantized level, for one or more specific quantized levels, as the need arises, and outputting the thus-obtained data as output image data;

a fourth part obtaining the error to be added to the input image data, from the output image data and image data to which the error is already added by said first part, and providing the thus-obtained error to said first part; and

a fifth part detecting, from the output image data, the number of pixels quantized to be higher than the quantized level 0 in a specific region in the periphery of a target pixel, and providing the thus-obtained number to said third part,

wherein said third part has a signal indicating a feature of an image region to which the target pixel belongs input thereto from the outside, and compares a threshold, relating to each of said one or more specific quantized levels, determined based on a parameter relating to said each of said one or more specific quantized levels determined according to the feature indicated by said signal, the number provided by said fifth part and the level of the input image data, with the level of the image data to which the error is already added, and, thereby, determines whether re-quantization for said each of said one or more specific quantized levels is necessary, occurrence of each of said one or more specific quantized levels being repressed in a degree according to said feature in a specific level region of the input image data relating to said each of said one or more specific quantized levels through the re-quantization by said third part; and

wherein re-quantization is performed, after the multi-level quantization is performed, in which, for a pixel having a specific quantization level, image data having an error added thereto according to the error diffusion method is compared with a threshold, and a final output value is determined.

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61. (currently amended) An image processing apparatus, comprising:
a first part adding an error to input image data;
a second part multi-level quantizing the image data to which the error is
already added by said first part, using a plurality of quantization thresholds;
a third part re-quantizing the quantized data provided by said second part,
into another quantized level, for one or more specific quantized levels, as the need
arises, and outputting the thus-obtained data as output image data;
a fourth part obtaining the error to be added to the input image data, from
the output image data and image data to which the error is already added by said first
part, and providing the thus-obtained error to said first part; and
a fifth part detecting, from the output image data, the number of pixels
quantized to be higher than the quantized level 0 in a specific region in the periphery of
a target pixel, and providing the thus-obtained number to said third part,
wherein said third part has a signal indicating a feature of an image region to
which the target pixel belongs input thereto from the outside, and compares a
threshold, relating to each of said one or more specific quantized levels, determined
based on a parameter relating to said each of said one or more specific quantized levels
determined according to the feature indicated by said signal, the number provided by
said fifth part and the level of the input image data, with the level of the image data to
which the error is already added, and, thereby, determines whether re-quantization for
said each of said one or more specific quantized levels is necessary, occurrence of each
of said one or more specific quantized levels being repressed in a degree according to
said feature in a specific level region of the input image data relating to said each of
said one or more specific quantized levels through the re-quantization by said third
part; and ~~The image processing apparatus as claimed in claim 60, wherein:~~
said signal indicates whether the image region to which the target pixel
belongs is a character region or a picture region; and

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said parameter relating to each of said one or more specific quantized levels is determined such that occurrence of said each of said one or more specific quantized levels is repressed only for the picture region.

62. (currently amended) An image processing apparatus, comprising:

a first part adding an error to input image data;

a second part multi-level quantizing the image data to which the error is already added by said first part, using a plurality of quantization thresholds;

a third part re-quantizing the quantized data provided by said second part, into another quantized level, for one or more specific quantized levels, as the need arises, and outputting the thus-obtained data as output image data;

a fourth part obtaining the error to be added to the input image data, from the output image data and image data to which the error is already added by said first part, and providing the thus-obtained error to said first part; and

a fifth part detecting, from the output image data, the number of pixels quantized to be higher than the quantized level 0 in a specific region in the periphery of a target pixel, and providing the thus-obtained number to said third part,

wherein said third part has a signal indicating a feature of an image region to which the target pixel belongs input thereto from the outside, and compares a threshold, relating to each of said one or more specific quantized levels, determined based on a parameter relating to said each of said one or more specific quantized levels determined according to the feature indicated by said signal, the number provided by said fifth part and the level of the input image data, with the level of the image data to which the error is already added, and, thereby, determines whether re-quantization for said each of said one or more specific quantized levels is necessary, occurrence of each of said one or more specific quantized levels being repressed in a degree according to said feature in a specific level region of the input image data relating to said each of

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said one or more specific quantized levels through the re-quantization by said third part; and ~~The image processing apparatus as claimed in claim 60,~~ wherein:

said signal indicates whether the image region to which the target pixel belongs is a character region or a picture region; and

said parameter relating to each of the one or more specific quantized levels is determined such that the degree of repressing occurrence of said each of said one or more specific quantized levels is made weaker for the character region than for the picture region.

63. (currently amended) An image processing apparatus, comprising:

a first part adding an error to input image data;

a second part multi-level quantizing the image data to which the error is already added by said first part, using a plurality of quantization thresholds;

a third part re-quantizing the quantized data provided by said second part, into another quantized level, for one or more specific quantized levels, as the need arises, and outputting the thus-obtained data as output image data;

a fourth part obtaining the error to be added to the input image data, from the output image data and image data to which the error is already added by said first part, and providing the thus-obtained error to said first part; and

a fifth part detecting, from the output image data, the number of pixels quantized to be higher than the quantized level 0 in a specific region in the periphery of a target pixel, and providing the thus-obtained number to said third part,

wherein said third part has a signal indicating a feature of an image region to which the target pixel belongs input thereto from the outside, and compares a threshold, relating to each of said one or more specific quantized levels, determined based on a parameter relating to said each of said one or more specific quantized levels determined according to the feature indicated by said signal, the number provided by

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said fifth part and the level of the input image data, with the level of the image data to which the error is already added, and, thereby, determines whether re-quantization for said each of said one or more specific quantized levels is necessary, occurrence of each of said one or more specific quantized levels being repressed in a degree according to said feature in a specific level region of the input image data relating to said each of said one or more specific quantized levels through the re-quantization by said third part; and The image processing apparatus as claimed in claim 60, wherein:

said signal indicates whether the image region to which the target pixel belongs is an edge region or a non-edge region; and

said parameter relating to each of the one or more specific quantized levels is determined such that occurrence of said each of said one or more specific quantized levels is repressed only for the non-edge region.

64. (original) An image processing apparatus, comprising:

a first part adding an error to input image data;

a second part multi-level quantizing the image data to which the error is already added by said first part, using a plurality of quantization thresholds;

a third part re-quantizing the quantized data provided by said second part, into another quantized level, for one or more specific quantized levels, as the need arises, and outputting the thus-obtained data as an output image data;

a fourth part obtaining the error to be added to the input image data, from the output image data and image data to which the error is already added by said first part, and providing the thus-obtained error to said first part; and

a fifth part detecting, from the output image data, the number of pixels quantized to be higher than the quantized level 0 in a specific region in the periphery of a target pixel, and providing the thus-obtained number to said third part,

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wherein said third part has a signal indicating an output mode input thereto from the outside, and compares a threshold, relating to each of said one or more specific quantized levels, determined based on a parameter relating to said each of said one or more specific quantized levels determined according to the output mode indicated by said signal, the number provided by said fifth part and the level of the input image data, with the level of the image data to which the error is already added, and, thereby, determines whether re-quantization for said each of said one or more specific quantized levels is necessary, occurrence of each of said one or more specific quantized levels being repressed in a degree according to said output mode in a specific level region of the input image data relating to said each of said one or more specific quantized levels through the re-quantization by said third part.

65. (original) The image processing apparatus as claimed in claim 56, wherein:

said second part performs 4-level quantization;

the re-quantization performed by said third part is performed for the quantized level 1; and

occurrence of the quantized level 1 is repressed in a medium level region of the input image data.

66. (original) The image processing apparatus as claimed in claim 58, wherein:

said second part performs 4-level quantization;

the re-quantization performed by said third part is performed for the quantized level 1; and

occurrence of the quantized level 1 is repressed in a medium level region of the input image data.

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67. (original) The image processing apparatus as claimed in claim 59,

wherein:

said second part performs 4-level quantization;

the re-quantization performed by said third part is performed for the quantized level 1; and

occurrence of the quantized level 1 is repressed in a medium level region of the input image data.

68. (original) The image processing apparatus as claimed in claim 60,

wherein:

said second part performs 4-level quantization;

the re-quantization performed by said third part is performed for the quantized level 1; and

occurrence of the quantized level 1 is repressed in a medium level region of the input image data.

69. (original) The image processing apparatus as claimed in claim 64,

wherein:

said second part performs 4-level quantization;

the re-quantization performed by said third part is performed for the quantized level 1; and

occurrence of the quantized level 1 is repressed in a medium level region of the input image data.

70. (original) The image processing apparatus as claimed in claim 56,

wherein:

said second part performs 4-level quantization;

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the re-quantization performed by said third part is performed for the quantized level 1 and quantized level 2;

occurrence of the quantized level 1 is repressed in a medium level region of the input image data; and

occurrence of the quantized level 2 is repressed in a high level region of the input image data.

71. (original) The image processing apparatus as claimed in claim 58, wherein:

said second part performs 4-level quantization;

the re-quantization performed by said third part is performed for the quantized level 1 and quantized level 2;

occurrence of the quantized level 1 is repressed in a medium level region of the input image data; and

occurrence of the quantized level 2 is repressed in a high level region of the input image data.

72. (original) The image processing apparatus as claimed in claim 59, wherein:

said second part performs 4-level quantization;

the re-quantization performed by said third part is performed for the quantized level 1 and quantized level 2;

occurrence of the quantized level 1 is repressed in a medium level region of the input image data; and

occurrence of the quantized level 2 is repressed in a high level region of the input image data.

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73. (original) The image processing apparatus as claimed in claim 60,
wherein:

said second part performs 4-level quantization;

the re-quantization performed by said third part is performed for the
quantized level 1 and quantized level 2:

occurrence of the quantized level 1 is repressed in a medium level region of
the input image data; and

occurrence of the quantized level 2 is repressed in a high level region of the
input image data.

74. (original) The image processing apparatus as claimed in claim 64,
wherein:

said second part performs 4-level quantization;

the re-quantization performed by said third part is performed for the
quantized level 1 and quantized level 2;

occurrence of the quantized level 1 is repressed in a medium level region of
the input image data; and

occurrence of the quantized level 2 is repressed in a high level region of the
input image data.

75. (original) The image processing apparatus as claimed in claim 60, further
comprising a sixth part generating said signal input to said third part.

76. (original) The image processing apparatus as claimed in claim 56, further
comprising a sixth part which forms an image from the image output data, using dots
for pixels which dots are larger as the pixels have higher quantized levels.

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77. (original) The image processing apparatus as claimed in claim 58, further comprising a sixth part which forms an image, from the image output data, using dots for pixels which dots are larger as the pixels have higher quantized levels.

78. (original) The image processing apparatus as claimed in claim 59, further comprising a sixth part which forms an image, from the image output data, using dots for pixels which dots are larger as the pixels have higher quantized levels.

79. (original) The image processing apparatus as claimed in claim 60, further comprising a sixth part which forms an image, from the image output data, using dots for pixels which dots are larger as the pixels have higher quantized levels.

80. (original) The image processing apparatus as claimed in claim 64, further comprising a sixth part which forms an image, from the image output data, using dots for pixels which dots are larger as the pixels have higher quantized levels.

81. (original) The image processing apparatus as claimed in claim 56, further comprising a sixth part generating the input image data by optically scanning an original.

82. (original) The image processing apparatus as claimed in claim 58, further comprising a sixth part generating the input image data by optically scanning an original.

83. (original) The image processing apparatus as claimed in claim 59, further comprising a sixth part generating the input image data by optically scanning an original.

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84. (original) The image processing apparatus as claimed in claim 60, further comprising a sixth part generating the input image data by optically scanning an original.

85. (original) The image processing apparatus as claimed in claim 64, further comprising a sixth part generating the input image data by optically scanning an original.

86. (original) The image processing apparatus as claimed in claim 56, further comprising:

a sixth part generating the input image data by optically scanning an original;
and

a seventh part forming an image, from the image output data, using dots for pixels which dots are larger as the pixels have higher quantized levels.

87. (original) The image processing apparatus as claimed in claim 58, further comprising:

a sixth part generating the input image data by optically scanning an original; and

a seventh part forming an image, from the image output data, using dots for pixels which dots are larger as the pixels have higher quantized levels.

88. (original) The image processing apparatus as claimed in claim 59, further comprising:

a sixth part generating the input image data by optically scanning an original; and

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a seventh part forming an image, from the image output data, using dots for pixels which dots are larger as the pixels have higher quantized levels.

89. (original) The image processing apparatus as claimed in claim 60, further comprising:

a sixth part generating the input image data by optically scanning an original; and

a seventh part forming an image, from the image output data, using dots for pixels which dots are larger as the pixels have higher quantized levels.

90. (original) The image processing apparatus as claimed in claim 64, further comprising:

a sixth part generating the input image data by optically scanning an original; and

a seventh part forming an image, from the image output data, using dots for pixels which dots are larger as the pixels have higher quantized levels.

91. (original) A computer-readable recording medium storing therein a program for causing a computer to carry out the function of each part of the image processing apparatus as claimed in claim 56.

92. (original) A computer-readable recording medium storing therein a program for causing a computer to carry out the function of each part of the image processing apparatus as claimed in claim 58.

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93. (original) A computer-readable recording medium storing therein a program for causing a computer to carry out the function of each part of the image processing apparatus as claimed in claim 59.

94. (original) A computer-readable recording medium storing therein a program for causing a computer to carry out the function of each part of the image processing apparatus as claimed in claim 60.

95. (original) A computer-readable recording medium storing therein a program for causing a computer to carry out the function of each part of the image processing apparatus as claimed in claim 64.